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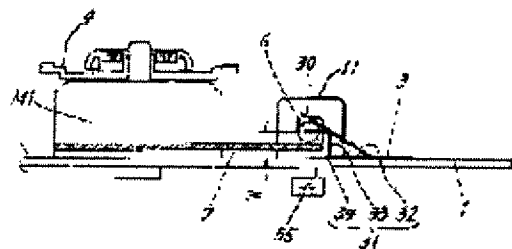
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### (54) DISK RECORDING OR REPRODUCING DEVICE HAVING PICKUP ADJUSTMENT MECHANISM

#### (57)Abstract:

PROBLEM TO BE SOLVED: To reduce the number of components and prevents the size of a chassis from being enlarged in a disk recording or reproducing device provided with a tilt adjustment mechanism of a pickup.

SOLUTION: The disk recording or reproducing device is provided, on the chassis 1, with a turn-table 4 for turning a disk, a pickup 2 which is arranged to be nearer to and away from the turn-table and whose movement is guided by a guide shaft 6, an adjustment mechanism for adjusting the tilt of the guide shaft 6 in the perpendicular plane to the surface of the chassis 1 including the moving direction of the pickup 2, a 1st retainer piece 30 for preventing the guide shaft 6 from being away from the chassis 1, and a 2nd retainer piece 31 for limiting the travel along the direction of the guide shaft 6. The guide shaft 6 is placed on the chassis 1, and a holding member 3 provided with the 1st and 2nd retainers 30, 31 integrally is provided on the chassis 1.



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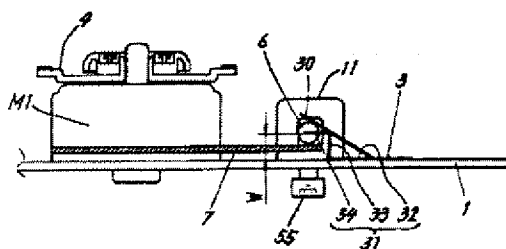
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(54) 【発明の名称】 ピックアップ調整機構を有するディスク記録又は再生装置

## (57) 【要約】

【課題】ピックアップの傾き調整機構を具えたディスク記録又は再生装置にて、構成部品点数を削減し、且つシャーシの大型化を防ぐ。

【解決手段】ディスク記録又は再生装置は、シャーシ1上に、ディスクを回転させるターンテーブル4と、該ターンテーブル4に対し接近離間可能に設けられ、ガイド軸6に移動を案内されるピックアップ2と、ピックアップ2の移動方向を含みシャーシ1面に対する垂直面内にてガイド軸6を傾き調整する調整機構と、ガイド軸6がシャーシ1から離れることを防ぐ第1 抜止め片30と、ガイド軸6の軸方向に沿う移動を規制する第2 抜止め片31とを具えている。ガイド軸6はシャーシ1上に載置され、シャーシ1上には、前記第1 抜止め片30と第2 抜止め片31を一体に具えた保持部材3が設けられている。



## 【特許請求の範囲】

【請求項1】 シャーシ(1)上に、ディスクを回転させるターンテーブル(4)と、該ターンテーブル(4)に対し接近離間可能に設けられ、ガイド軸(6)に移動を案内されるピックアップ(2)と、ピックアップ(2)の移動方向を含みシャーシ(1)面に対する垂直面内にてガイド軸(6)を傾き調整する調整機構と、ガイド軸(6)がシャーシ(1)から外れることを防ぐ第1 抜止め片(30)と、ガイド軸(6)の軸方向に沿う移動を規制する第2 抜止め片(31)とを具えたディスク記録又は再生装置に於いて、ガイド軸(6)はシャーシ(1)上に載置され、シャーシ(1)上には、前記第1 抜止め片(30)と第2 抜止め片(31)を一体に具えた保持部材(3)が設けられたことを特徴とするディスク記録又は再生装置。

【請求項2】 第2 抜止め片(31)はシャーシ(1)から離間した位置に設けられ、該第2 抜止め片(31)とシャーシ(1)との間には、シャーシ(1)上の構成部品が挿入される隙間が形成された請求項1に記載のディスク記録又は再生装置。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、ディスクにビームを発するピックアップの傾き調整機構を具えたディスク記録又は再生装置に関するものである。

## 【0002】

【従来の技術】 図7は、従来のディスク記録再生装置の裏面図である。シャーシ(1)に開設された開口(10)内の端部には、ディスクを回転させるターンテーブル(4)が設けられ、開口(10)の下側には、2本のガイド軸(6)(60)が架け渡されている。ガイド軸(6)(60)にはディスクにビームを発するピックアップ(2)が滑動自在に嵌まって、ターンテーブル(4)に対して接近離間可能に設けられている。ピックアップ(2)には、レンズ(21)が設けられ、図9はレンズ(21)の合焦状態を示す。レンズ(21)によるビームの絞り径 $\phi$ が小さいほど記録密度が高くなり、該絞り径 $\phi$ は記録再生波長を $\lambda$ とすると、周知の如く、

$$\phi = k\lambda / 2NA \quad (kは比例定数)$$

で示される。ここでNA(Numerical Aperture)とは開口数であり、図9中のレンズ(21)の中心線Lと、ビームの成す角を $\theta$ として、 $\sin\theta$ で示される。従って、ディスクの記録密度を大きくするには、波長 $\lambda$ を小さくすると共にNAを大きくすればよい。近年、ディスクは音声信号のみならず、映像信号も記録再生可能なDVD(Digital Versatile Disc)が提案されており、かかるDVDにあっては記録密度を大きくする必要がある。このため、音声信号を再生するCD(Compact Disc)用レンズ(21)ではNAが0.45であるのに対し、該DVDに用いられるレンズ(21)のNAは0.6である。従って、DVD用レンズはCD用レンズに比して、ビームの絞り径 $\phi$ が小

さいために、ディスクが正規の位置から傾いていると、ビームが正規の位置に合焦せず、信号のS/N比が悪くなり、記録又は再生が正しく行われない虞れがある。この点に鑑みて、レンズ(21)を内包するピックアップ(2)の傾き調整機構(5)を設けている。

【0003】 図10は、該ピックアップ(2)の傾き調整機構(5)を示す斜視図である。これは傾斜面(90)を具えたカム片(9)であり、シャーシ(1)上にガイド軸(6)に直交する向きに移動される。カム片(9)が矢印C方向に移動すればガイド軸(6)は傾斜面(90)を押されて上昇し、矢印D方向に移動すればガイド軸(6)は下降する。これによって、ピックアップ(2)及びガイド軸(6)は、ピックアップ(2)の移動方向を含み、シャーシ(1)に直交する面内にて回転する。即ち、図10の矢印E又はF方向に上下移動する。シャーシ(1)上には、ガイド軸(6)を下向きに付勢してガイド軸(6)がシャーシ(1)から外れることを防ぐ第1 抜止め片(30)が設けられている。また、ガイド軸(6)は昇降可能に設けられるが、ガイド軸(6)が軸方向に沿って不用意に移動すれば、ピックアップ(2)の高さも変化する。即ち、ピックアップ(2)はガイド軸(6)に嵌まっているから、シャーシ(1)に対して傾いたガイド軸(6)が軸方向に沿って動けば、ピックアップ(2)の高さもズレる。この点に鑑みて、図8に示すように、シャーシ(1)上に、ガイド軸(6)の端面に対向した第2 抜止め片(31)を設けて、ガイド軸(6)が軸方向に沿って不用意に移動することを防いでいる。

## 【0004】

【発明が解決しようとする課題】 従来のディスク記録又は再生装置にあっては、第1 抜止め片(30)と第2 抜止め片(31)とが別個に設けられていたから、構成部品点数が多くなる。また、シャーシ(1)上に、両抜止め片(30)(31)の設置場所を設ける必要があるから、シャーシ(1)が大型になっていた。本発明の目的は、ピックアップの傾き調整機構を具えたディスク記録又は再生装置にて、構成部品点数を削減し、且つシャーシの大型化を防ぐことにある。

## 【0005】

【課題を解決する為の手段】 ガイド軸(6)はシャーシ(1)上に載置され、シャーシ(1)上には、第1 抜止め片(30)と第2 抜止め片(31)を一体に具えた保持部材(3)が設けられている。また、第2 抜止め片(31)はシャーシ(1)から離間した位置に設けられ、該第2 抜止め片(31)とシャーシ(1)との間には、シャーシ(1)上の構成部品が挿入される隙間が形成されている。

## 【0006】

【作用及び効果】 第1 抜止め片(30)と第2 抜止め片(31)は一体に形成されているから、構成部品点数を削減することができるとともに、シャーシ(1)の大型化を防ぐことができる。また、第2 抜止め片(31)とシャーシ(1)との間に形成された隙間に、シャーシ(1)上の構成部品を

【0007】

【0010】図1に示すシャーシ(1)上にて、ターンテーブル(4)の近傍には、後記する保持部材(3)が設けられ、図4は、保持部材(3)を省略したディスク記録又は再生装置の正面図である。シャーシ(1)上には、壁片(11)(11)が立設し、該壁片(11)(11)にはガイド軸(6)(60)の他端部が嵌まる長孔(12)が上下に延びて開設されている。ガイド軸(6)(60)は長孔(12)に嵌まって左右振れを規制され、上下移動のみを許される。シャーシ(1)の下 50

【図4】 保持部材を省略したディスク記録又は再生装置

の正面図である。

【図5】ターンテーブルの近傍を拡大した平面図である。

【図6】図6は図5の正面図である。

【図7】従来のディスク記録再生装置の裏面図である。

【図8】従来の第2 抜止め片の斜視図である。

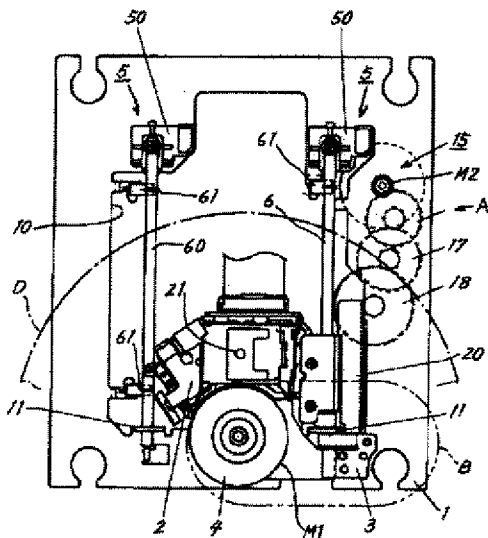
【図9】レンズの合焦状態を示す図である。

【図10】ピックアップの傾き調整機構を示す斜視図である。

\* 【符号の説明】

- (1) シャーシ
- (2) ピックアップ
- (3) 保持部材
- (4) ターンテーブル
- (6) ガイド軸
- (30) 第1 抜止め片
- (31) 第2 抜止め片
- (60) ガイド軸

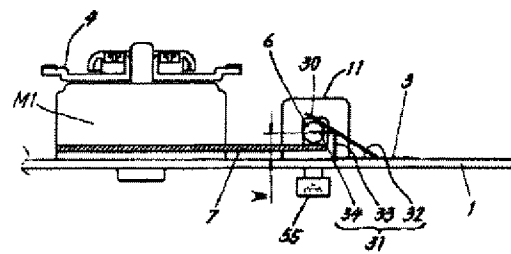
【図1】



【図2】

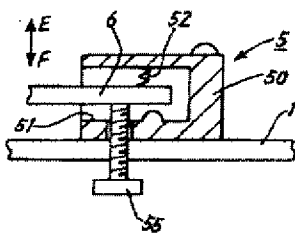


【図6】

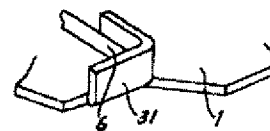
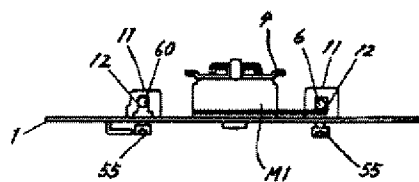


【図8】

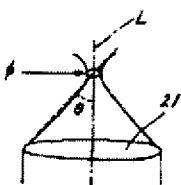
【図3】



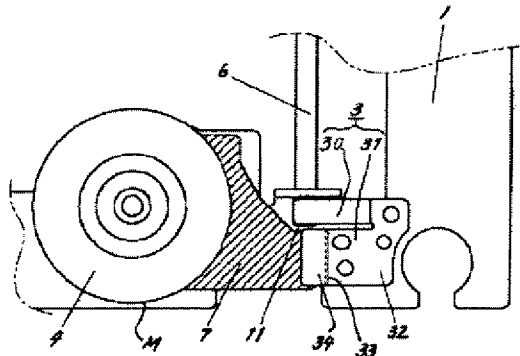
【図4】



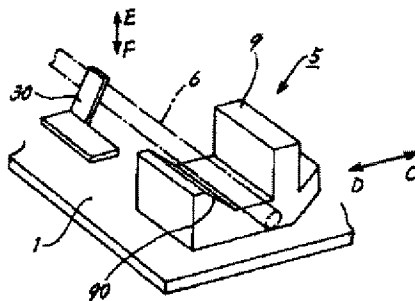
【図9】



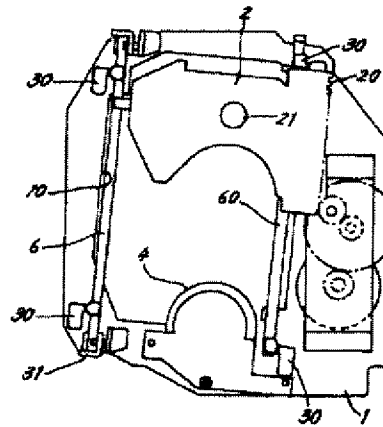
【図5】



【図10】



【図7】



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**CLAIMS**

[Claim(s)]

[Claim 1] The turntable made to rotate a disk on a chassis (1) (4), this turntable (4) -- receiving -- approach -- it being prepared possible [ alienation ] and with the pickup (2) guided in migration at a guide shaft (6) The adjustment device in which incline and a guide shaft (6) is adjusted in the vertical plane over a chassis (1) side including the migration direction of pickup (2), The piece of the 1st \*\*\*\*\* which prevents a guide shaft (6) separating from a chassis (1) (30), In disk record or a regenerative apparatus equipped with the piece of the 2nd \*\*\*\*\* (31) which regulates migration in alignment with the shaft orientations of a guide shaft (6) A guide shaft (6) is the disk record or the regenerative apparatus characterized by having been laid on the chassis (1) and preparing the attachment component (3) which equipped one with said piece of the 1st \*\*\*\*\* (30) and piece of the 2nd \*\*\*\*\* (31) on a chassis (1).

[Claim 2] The piece of the 2nd \*\*\*\*\* (31) is the disk record according to claim 1 or the regenerative apparatus with which it was prepared in the location estranged from the chassis (1), and the clearance where the component part on a chassis (1) is inserted was formed between this piece of the 2nd \*\*\*\*\* (31), and the chassis (1).

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the disk record or the regenerative apparatus which equipped the disk with the inclination adjustment device of the pickup which emits a beam.

[0002]

[Description of the Prior Art] Drawing 7 is the rear-face Fig. of the conventional disk record regenerative apparatus. The turntable (4) made to rotate a disk is prepared in the edge in opening (10) established by the chassis (1), and the opening (10) bottom is built over two guide shafts (6) and (60). the pickup (2) which emits a beam on a disk a guide shaft (6) and (60) -- sliding -- free -- fitting in -- a turntable (4) -- receiving -- approach -- it is prepared possible [ alienation ]. A lens (21) is prepared in pickup (2) and drawing 9 shows the focus condition of a lens (21) to it. When recording density becomes high and this diameter phi of a diaphragm sets record playback

wavelength to  $\lambda$  so that the diameter  $\phi$  of drawing of a beam with a lens (21) is small, it is  $\phi = k \lambda / 2NA$  like common knowledge. ( $k$  is a proportionality constant) It is shown. NA (Numerical Aperture) is a numerical aperture here, and it is shown by  $\sin \theta$ , using as  $\theta$  the angle which the center line  $L$  of the lens in drawing 9 (21) and a beam constitute. Therefore, what is necessary is just to enlarge NA, while making wavelength  $\lambda$  small in order to enlarge recording density of a disk. In recent years, if DVD (Digital Versatile Disc) in which an account rec/play student is possible is proposed and a disk has not only a sound signal but a video signal in this DVD, it needs to enlarge recording density. For this reason, NA of the lens (21) used for this DVD to NA being 0.45 with the lens for CD (Compact Disc) (21) which reproduces a sound signal is 0.6. Therefore, a beam does not focus in the location of normal, but the S/N ratio of a signal worsens, and the lens for DVD has a possibility that record or playback may not be performed correctly, when the disk leans [ the diameter  $\phi$  of drawing of a beam ] from the location of normal as compared with the lens for CD, since it is small. In view of this point, the inclination adjustment device (5) of pickup (2) in which a lens (21) is connoted is established.

[0003] Drawing 10 is the perspective view showing the inclination adjustment device (5) of this pickup (2). This is the piece of a cam (9) equipped with the inclined plane (90), and is moved to the sense which intersects perpendicularly with a guide shaft (6) on a chassis (1). If the piece of a cam (9) moves in the direction of arrow-head C, a guide shaft (6) will be pushed on an inclined plane (90), and will go up, and if it moves in the direction of arrow-head D, a guide shaft (6) will descend. By this, pickup (2) and a guide shaft (6) rotate in the field which intersects perpendicularly with a chassis (1) including the migration direction of pickup (2). Namely, vertical migration is carried out in the arrow head E or the direction of F of drawing 10. On the chassis (1), the piece of the 1st \*\*\*\*\* (30) which prevents energizing a guide shaft (6) downward and a guide shaft (6) separating from a chassis (1) is prepared. Moreover, although a guide shaft (6) is established possible [ rise and fall ], if a guide shaft (6) moves carelessly in accordance with shaft orientations, the height of pickup (2) will also change. That is, if the guide shaft (6) which inclined to the chassis (1) since pickup (2) had fitted into the guide shaft (6) moves in accordance with shaft orientations, the height of pickup (2) will also shift. In view of this point, as shown in drawing 8, it has prevented preparing the piece of the 2nd \*\*\*\*\* (31) which countered the end face of a guide shaft (6), and a guide shaft (6) moving carelessly in accordance with shaft orientations onto a chassis (1).

[0004]

[Problem(s) to be Solved by the Invention] If it was in the conventional disk record or a regenerative apparatus, since the piece of the 1st \*\*\*\*\* (30) and the piece of the 2nd \*\*\*\*\* (31) were prepared separately, component part mark increase. Moreover, since the installation of the piece of both \*\*\*\*\* (30) and (31) needed to be prepared on the chassis (1), the chassis (1) was large-sized. The purpose of this invention is to reduce component part mark and prevent enlargement of a chassis with disk record or a regenerative apparatus equipped with the inclination adjustment device of pickup.

[0005]

[Means for Solving the Problem] A guide shaft (6) is laid on a chassis (1), and the attachment component (3) which equipped one with the piece of the 1st \*\*\*\*\* (30) and the piece of the 2nd \*\*\*\*\* (31) is prepared on the chassis (1). Moreover, the piece of the 2nd \*\*\*\*\* (31) is prepared in the location estranged from the chassis (1), and the clearance where the component part on a chassis (1) is inserted is formed between this piece of the 2nd \*\*\*\*\* (31), and the



chassis (1).

[0006]

[Function and Effect] They can prevent enlargement of a chassis (1) while they can reduce component part mark, since the piece of the 1st \*\*\*\*\* (30) and the piece of the 2nd \*\*\*\*\* (31) are formed in one. Moreover, since the component part on a chassis (1) can be inserted in the clearance formed between the piece of the 2nd \*\*\*\*\* (31), and the chassis (1), namely, the component part and the piece of the 2nd \*\*\*\*\* (31) on a chassis (1) can be arranged on a chassis (1) in piles, the miniaturization of a chassis (1) can be attained also at this point.

[0007]

[Embodiment of the Invention] Hereafter, an example of this invention is explained in full detail using drawing. Drawing 1 is the top view of disk record or a regenerative apparatus, and drawing 2 is the right side view which looked at drawing 1 from A. Pickup (2) was prepared in opening (10) established by the chassis (1) as usual, and the both ends of this pickup (2) have fitted into a guide shaft (6) and (60) free [ sliding ] ranging over opening (10). Pickup (2) fits into one guide shaft (6) in few condition with backlash, and fits into the guide shaft (60) of another side with allowances. The turntable (4) which a motor (M1) drive is carried out and is made to rotate Disk D is prepared in the edge of opening (10), and the clasper (not shown) which carries out press maintenance of the disk on a turntable (4) is prepared above a turntable (4).

[0008] Pickup (2) forms a rack (20) in one flank, and this rack (20) gets into gear in the gear device (15) prepared in the flank of a chassis (1). A gear device (15) is equipped with two gears (17) coordinated with the motor (M2) located on a chassis (1), and a motor (M2), and (18), and the gear (18) of the downstream meshes on the rack (20) of pickup (2). Rotation of a motor (M2) moves pickup (2) along with a guide shaft (6) and (60). As shown in drawing 2, the guide shaft (6) is energized downward with the tension spring (61) hung between chassis (1). The guide shaft (60) of another side is energized downward with the tension spring (61). On the chassis (1), it has as usual the inclination adjustment device (5) in which a guide shaft (6) and (60) are rotated up and down, in the field which intersected perpendicularly with the chassis (1) including the migration direction of pickup (2), and the end section of a guide shaft (6) inclined and has fitted into the adjustment device (5).

[0009] Drawing 3 is the sectional view of an inclination adjustment device (5). The end section of a guide shaft (6) is contained by the space (51) in the bracket (50) on a chassis (1), and the adjustment screw (55) screwed from the chassis (1) bottom penetrates a bracket (50), and receives a guide shaft (6). A guide shaft (6) is energized downward towards an adjustment screw (55) with the push spring (52) prepared in space (51). If an adjustment screw (55) is rotated, as a guide shaft (6) shows arrow heads E and F, vertical rotation will be carried out and inclination adjustment can be performed.

[0010] On the chassis (1) shown in drawing 1, the attachment component (3) which carries out a postscript is prepared near the turntable (4), and drawing 4 is the front view of the disk record which omitted the attachment component (3), or a regenerative apparatus. On the chassis (1), the piece of a wall (11) and (11) set up, and the long hole (12) into which the other end of a guide shaft (6) and (60) fits is prolonged up and down, and is established by this piece of a wall (11), and (11). A guide shaft (6) and (60) fit into a long hole (12), have a right-and-left deflection regulated, and are allowed only vertical migration. From the chassis (1) bottom, if the adjustment screw (55) which receives a guide shaft (6) and (60), and (55) screw and an adjustment screw (55) is rotated, inclination adjustment of a guide shaft (6) and (60) can be performed like said inclination adjustment device (5).

[0011] Drawing 5 is the top view expanded near the turntable (4) shown by B to drawing 1 , and drawing 6 is the front view of drawing 5 . The other end of the guide shaft (6) which passed the piece of a wall (11) touches an attachment component (3). The attachment component (3) bent the metal plate, and was formed, elastic energization of the other end of a guide shaft (6) was carried out at the chassis (1), and one is equipped with the piece of the 1st \*\*\*\*\* (30) which prevents separating from a chassis (1), and the piece of the 2nd \*\*\*\*\* (31) which regulates migration in alignment with the shaft orientations of a guide shaft (6). They can prevent enlargement of a chassis (1) while they can reduce component part mark, since the piece of the 1st \*\*\*\*\* (30) and the piece of the 2nd \*\*\*\*\* (31) are formed in one. It is prevented by the piece of the 1st \*\*\*\*\* (30) that a guide shaft (6) separates from a chassis (1), and pickup (2) is correctly guided in migration. If the reason for regulating the migration which meets the shaft orientations of a guide shaft (6) by the piece of the 2nd \*\*\*\*\* (31) moves in accordance with shaft orientations, with a guide shaft (6) inclined, the height of the pickup (2) which has fitted into the guide shaft (6) will shift. Now, since focus servo actuation of the common knowledge which makes a beam focus on a disk is affected, migration in alignment with the shaft orientations of a guide shaft (6) has been regulated.

[0012] It hits, it has a piece (34) and the piece of the 2nd \*\*\*\*\* (31) is formed in the configuration which was prolonged toward the turntable (4) from the upper limit of the piece of a plate (32) which touches a chassis (1), the vertical piece (33) prolonged upwards from the piece of a plate (32), and a vertical piece (33), and separated only the clearance W from the chassis (1) and which rose one step. The piece of a hit (34) approached and countered the end face of a guide shaft (6), and migration in alignment with the shaft orientations of a guide shaft (6) is regulated. From the motor (M1) made to rotate a turntable (4), the circuit board (7) is prolonged toward the attachment component (3), and the edge of this circuit board (7) is located under the piece of a hit (34). That is, the piece of a hit (34) of the circuit board (7) and the piece of the 2nd \*\*\*\*\* (31) has lapped superficially, and can attain the miniaturization of a chassis (1) also at this point. Although the circuit board (7) is arranged under the piece of a hit (34) if it is in this example, other component parts on a chassis (1) may be arranged.

[0013] Explanation of the above-mentioned example is for explaining this invention, and it should not be understood so that invention of a publication may be limited to a claim or the range may be \*\*\*\*(ed). Moreover, as for each part configuration of this invention, it is needless to say for deformation various by technical within the limits given not only in the above-mentioned example but a claim to be possible.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the top view of disk record or a regenerative apparatus.

[Drawing 2] It is the right side view which looked at drawing 1 from A.

[Drawing 3] It is the sectional view of an inclination adjustment device.

[Drawing 4] It is the front view of the disk record which omitted the attachment component, or a regenerative apparatus.

[Drawing 5] It is the top view expanded near the turntable.

[Drawing 6] Drawing 6 is the front view of drawing 5 .

[Drawing 7] It is the rear-face Fig. of the conventional disk record regenerative apparatus.

[Drawing 8] It is the perspective view of the conventional piece of the 2nd \*\*\*\*\*.

[Drawing 9] It is drawing showing the focus condition of a lens.

[Drawing 10] It is the perspective view showing the inclination adjustment device of pickup.

[Description of Notations]

- (1) Chassis
- (2) Pickup
- (3) Attachment component
- (4) Turntable
- (6) Guide shaft
- (30) The piece of the 1st \*\*\*\*\*
- (31) The piece of the 2nd \*\*\*\*\*
- (60) Guide shaft